A Method for Manufacturing Silicate Waveguide Compositions For Extended L-Band and S-Band Amplification

ABSTRACT

A method of making an erbium-doped optical fiber for use in optical amplifiers according to the present invention includes the step of providing a substrate tube. High purity silica-based cladding layers are deposited on the inside of the tube. A core glass that includes silica, Al, a non-fluorescent rare-earth ion, Ge, Er, and Tm is then deposited in the tube. The non-fluorescent rare-earth ion may be La and the core may further include F. The tube is then collapsed to form a preform. Finally, the preform is drawn to yield optical fiber.

The core glass may be substantially homogeneous. The core may include at least two regions, wherein one region contains a substantially different Er toTm ratio than the other region. Said regions may be in an annular arrangement. The core of such a waveguide may be made with multiple MCVD passes, multiple sol-gel passes or with multiple soot deposition, solution doping, and consolidation passes.